

## ELECTROMAGNETIC TREATMENT DEVICE

### CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to U.S. Provisional Application 60/673,398 filed on Apr. 21, 2005 ("Provisional Application"), which is incorporated herein by reference along with its appendices.

### FIELD OF THE INVENTION

[0002] The present invention relates to the field of medicine and alternative medicine. More particularly, the invention relates to a system for treating subjects with a magnetic field.

### BACKGROUND

[0003] The human body produces subtle electromagnetic fields, which have been generated in the body through chemical reaction within cells and ionic currents passing through the nervous system. In recent years scientists have been discovering ways that electromagnetic fields influence the body's functioning both in a positive as well as a negative manner. These observations and others have led to the development of electromagnetic therapy as an alternative medicine.

[0004] Alternative medicines and therapeutic treatments have been developed to treat disease, illness, and injury. Alternative treatments comprise herbal potions, therapeutic massage, acupuncture, chiropractic manipulation, yoga, and other techniques. Diet and nutrition techniques have supplemented medicinal remedies for disease such as diabetes. Numerous techniques have been developed to treat disease, illness and injury with different forms of electrical energy. Representative examples include U.S. Pat. No. 3,670,737 which disclosed a device for administering high frequency oscillations to a patient. The treatment duration was controlled to limit undesirable heat generation. U.S. Pat. No. 4,621,642 disclosed a microwave apparatus for contacting a patient with a multi-frequency output. U.S. Pat. No. 5,186,171 disclosed a high voltage, high frequency pulsed source for treating musculoskeletal disorders. Numerous other techniques have been developed for the application of different energy forms to a body, however the relative success of such techniques is inconsistent.

[0005] Although existing techniques are available to treat certain illness and disease, improvements in, additions to and complements of such treatments would enhance the quality of life and ameliorate or reduce symptoms associated with a variety of conditions. A need exists for additional systems and methods capable of complementing treatment of certain disorders, abnormalities, and diseases. The present invention provides a system for exposing all or part of a subject to a magnetic field.

### SUMMARY OF INVENTION

[0006] Embodiments of the system comprise a direct current electricity source, a coil that is activated by the source to generate a magnetic field, and an aperture within the coil for permitting insertion therein of one or more appendage or part(s) of a subject so that components of the blood or other tissues are subjected to the magnetic field.

[0007] Certain embodiments of the invention include a system for treating subjects and the components of their blood or tissues, including but not limited to blood borne cells, proteins, solutes and other components. These components may be circulated via the blood or lymph within a subject. A system of the invention typically comprises: a) a direct current electricity source; b) a coil that can be activated by the source to generate a magnetic field; and c) an aperture within said coil for permitting insertion therein of an appendage for the person so that blood cells within the appendage are subjected to said magnetic field. In certain aspects, the system is capable of modifying blood cells within the appendage for treatment of a subject at a location exterior to or distal to the appendage. In various embodiments the aperture is capable of permitting insertion of the person's hand, foot, wrist, ankle, lower leg, upper arm or any other body part, including the whole body of smaller animals. Preferably, the diameter of the coil is greater than the depth of the coil, more preferably the diameter may be 2 to 20 times that of the depth of the coil. Diameter is determined by the length across the vertical plane forming a circular cross-section (circular plane) of the coil, see FIG. 6. Depth is the length measurement along the perpendicular from the circular plane of the coil, see FIG. 6. The system may further comprise a heat exchanger for removing heat from said coil.

[0008] The system may further comprise a housing around the coil, a fluid within the housing, and a conduit for conveying the fluid from the housing to the heat exchanger. In a preferred embodiment the housing is manufactured from a metal such as steel. The system may further comprise a pump for circulating the fluid through the housing and the heat exchanger. Preferably, the fluid is a non-conducting fluid with the appropriate properties for heat exchange, such as silicon oil, and more preferably silicon transformer oil.

[0009] In yet another embodiment, the system may include various sensors. Such sensors typically include a sensor for monitoring the temperature of the coil, a sensor for monitoring the voltage and current passing to the coil, or both, a sensor for monitoring the temperature of the coil and a sensor for monitoring the voltage and current passing to the coil. In another aspect, the coil is capable of modifying the relative orientation of the blood cells, modifying the magnetic properties of the blood cells, or both modifying the relative orientation of the blood cells and modifying the magnetic properties of the blood cells.

[0010] In still yet another embodiment, a system of the invention may be used for treating a subject. The methods include using a system comprising: a) a housing for a direct current electricity source; b) a coil that is activated by the source and generates a magnetic field; c) an aperture within the coil for permitting insertion therein of an appendage for the subject so that blood within the appendage are subjected to the magnetic field; and d) a heat exchanger engaged with the coil for removing heat from the coil. In a preferred embodiment, the aperture is lined with a stainless steel cylinder or sleeve. In still another preferred embodiment the housing is manufactured from a metal or steel. Typically, this sleeve will be continuous with the housing forming the enclosed module casing. An insulating sleeve with an interior diameter larger than the exterior diameter of the stainless steel sleeve, which is constructed of a non-conducting material, such as plastic or ceramic material, is positioned